

# Venereal diseases in the Pacific Islands\*

## Papua New Guinea

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**SUMMARY** Papua New Guinea, which contains nearly three-quarters of the population of the 20 islands, or island groups, studied by the South Pacific Commission has a commensurate proportion of reported cases of syphilis and gonorrhoea. It is a country with an exceptional interest for the venereologist as it exhibits all the facets of venereal disease problems as experienced the world over. With the opening up of communications syphilis has gained a foothold in what were areas previously endemic with yaws; moreover, some yaws still remains (particularly in the offshore islands)—the two conditions tending to be mutually exclusive. In the area around the capital, Port Moresby, the prevalence of Donovanosis is unparalleled.

### Introduction

Venereal diseases in the islands of the Pacific Ocean have already been considered in two previous papers;<sup>1,2</sup> the first related to the islands of the North Pacific and the second to those of the South Pacific. The islands of the latter, of which Papua New Guinea is by far the largest member, provide epidemiological data to the South Pacific Commission.

The territory is separated by the Torres Strait from the tip of Queensland in Australia (figure). Its mountainous hinterland prevents road access from its capital, Port Moresby, in the south-east to the principal towns. A highway has been constructed however across the Highlands from the port of Lae in the east to Mount Hagen and beyond in the west.

Previously the offshore islands of the Bismarck Archipelago and the northern Solomon Isles (Manus, New Britain, New Ireland, Bougainville, and Buka) were included in the territory, but the latter have recently seceded to form the independent republic of North Solomons.

### AIR COMMUNICATIONS

From Europe, Papua New Guinea is reached by way of Hong Kong or Manila. Within the country, which

has much difficult terrain, air travel is very important and a considerable network has been established; 47 different local centres are served by internal flights of three airlines from Port Moresby, 15 are reached from Lae, and more from other centres, for example, Goroka.

### COMPARISON WITH OTHER SOUTH PACIFIC ISLANDS

#### *Dominance in statistical terms*

In the epidemiological data compiled by the South Pacific Commission, Papua New Guinea has the dominant position among the 20 island territories. Occupying 85% of the total land mass, it contains nearly three-quarters of the population (table I).<sup>3,4</sup> The number of reported cases of syphilis and gonorrhoea is proportionate to the size of the population, but virtually all cases of yaws now reported in the South Pacific are found in this territory.

TABLE I *Population size and prevalence of gonorrhoea, syphilis, and yaws in Papua New Guinea compared with other South Pacific islands*<sup>3,4</sup>

	<i>Total for South Pacific islands (1978)</i>	<i>Papua New Guinea</i>	
		<i>No</i>	<i>%</i>
Size (square miles)	204 923	174 880	85·3
Population 1978 (× 1000)	4052·4	2990	73·8
Cases of			
Gonorrhoea	13 657	10 386	76·0
Syphilis	4652	3485	74·9
Yaws	883	880	99·7

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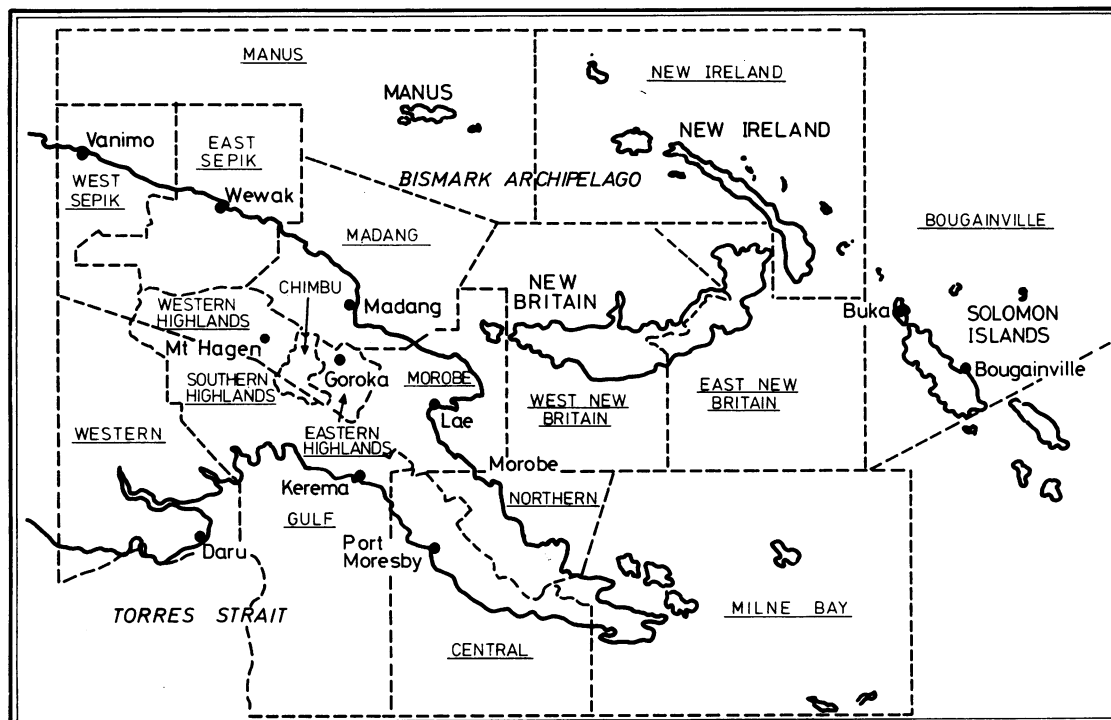


FIGURE Papua New Guinea showing mainland and island districts

### Population increase

The increasing population of Papua New Guinea and the other islands embraced by the South Pacific Commission is shown in table II. In the five-year period, 1973-78, the estimated population of the whole region increased by 12.8%, but the increase was greater for Papua New Guinea than for the other 19 island groups.<sup>3-6</sup>

(Morobe, Eastern and Western Highlands, and Chimbu); (c) eight other mainly more sparsely populated rural districts on the mainland; and (d) the offshore islands of the Bismarck Archipelago and Northern Solomons. The first two areas have the largest populations and the five island districts the smallest (table III; figure).

### Venereal diseases

#### GONORRHOEA

In the five years, 1973-78, the number of reported cases of gonorrhoea in Papua New Guinea has increased from 202 to 347 per 100 000 whereas that of the other islands (181 per 100 000 in 1978) has remained virtually unchanged (table IV).<sup>4-7</sup>

#### GROUPING OF STATISTICS

The statistics of the districts may be conveniently considered in four areas. These comprise (a) the single central district, which includes Port Moresby; (b) the four districts with relatively large populations which straddle the highway through the Highlands

TABLE II Population size of Papua New Guinea and other islands of the South Pacific (1973-8)<sup>3-6</sup>

	Population (× 1000)								% Increase (1973-8)
	1973		1974		1977		1978		
	No	%	No	%	No	%	No	%	
Papua New Guinea	2620	61.6	2682	61.7	2908	62.3	2990	62.3	14.1
Other islands	1632	38.4	1664	38.3	1763	37.7	1808	37.7	10.8
Total	4252	100.0	4346	100.0	4671	100.0	4798	100.0	12.8

TABLE III *Population of Papua New Guinea according to districts*

Area	No of districts	Population size ( $\times 1000$ )		
		Estimated (1971)	Per district	% of total
Central district	1	175.5	175.5	7.2
Morobe, Chimbu, Eastern Highlands, Western Highlands	4	838.7	209.7	34.4
Other mainland districts*	8	1079	134.9	44.3
Islands†	5	342.3	68.5	14.1
Total	18	2435.5	135.3	100.0

\*Northern, Milne Bay, West Sepik, East Sepik, Southern Highlands, Madang, Western, and Gulf

†Manus, East and West New Britain, New Ireland, and Bougainville

In any developing country where the diagnosis may only be clinical, an increase in reported cases does not however necessarily indicate an increase in the true prevalence of the disease but can reflect improved detection and reporting due to better facilities and a greater awareness.

The gonorrhoea figures for Papua New Guinea in 1973 are analysed according to the four areas in table V. By far the greatest number of cases of gonorrhoea (60.1%) was treated in the four districts adjacent to the Highlands highway and only 15.9% in the single Central district, containing the capital. Nevertheless, when expressed as a rate per 100 000 population, the Central district had the highest (462 per 100 000) while the eight mainland districts unconnected with the Highlands highway had the lowest (50 per 100 000). The relatively high rate for the offshore islands was augmented by returns from the port of

TABLE V *Prevalence of gonorrhoea in Papua New Guinea by districts\**

Area	No of districts	No of cases	%	Rates per 100 000
Central district	1	811	15.9	462
Morobe, Chimbu, E and W Highlands	4	3069	60.1	366
Other mainland districts	8	535	10.5	50
Islands	5	686	13.4	200
Total	18	5101	100.0	209

\*Based on 1973 figures

Rabaul in New Britain and from near and around the large copper mine at Panguna on the island of Bougainville.

#### YAWS

Yaws, which at one time was endemic throughout the islands of the South Pacific, has now been virtually eliminated from all but Papua New Guinea, where—although subjected to mass campaigns in the 1950s—the disease still smoulders on (table VI).

In the area of the South Pacific Commission no less than 1810 (98.6%) of the 1836 cases of yaws reported in the two years, 1977 and 1978, were in Papua New Guinea and only 26 (1.4%) in the other 19 islands (all in the New Hebrides).

Before 1973, fewer cases were returned for Papua New Guinea—that is, 416 in 1972 and 135 in 1971. While such statistics may be related to conscientiousness or enthusiasm in reporting, the recent figures nevertheless suggest a recrudescence from previously low levels. Yaws is still reported in the

TABLE IV *Prevalence of gonorrhoea in Papua New Guinea in relation to other islands of the South Pacific<sup>4,7</sup>*

	1973		1974		1977		1978	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
Papua New Guinea	5156	202	5759	219	8954	308	10 386	347
Other islands	3055	187	2446	147	3308	188	3271	181
Total	8211	116	8205	191	12 262	263	13 657	285

\*Per 100 000 population

TABLE VI *Prevalence of yaws in Papua New Guinea in relation to other islands of the South Pacific<sup>4,7</sup>*

	1973		1974		1977		1978	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
Papua New Guinea	954	36	504	19	930	32	880	29
Other islands	16	1	7	0.4	23	1.3	3	0.2
Total	970	23	511	12	953	20	883	18

\*Per 100 000 population

rural areas and in the islands of the Bismarck Archipelago, particularly in Bougainville and in New Britain around Rabaul, where more recently small mass campaigns have been undertaken (table VII). The disease is, however, extremely rare in the four Highland districts and nonexistent in the Central district around Port Moresby.

TABLE VII *Prevalence of yaws in Papua New Guinea by districts\**

Area	No of districts	No of cases	%	Rates per 100 000
Central district	1	0	0	0
Morobe, Chimbu, E and W Highlands	4	4	0.5	0.5
Other mainland districts	8	120	14.1	11
Islands	5	726	85.4	212
Total	18	850	100.0	35

\*Based on 1973 figures

While in Bougainville in 1974, from where the greatest number had been reported, I saw some cases of yaws during a tour of some rural health and mission centres. The older nurses expressed no doubts that the disease which they recalled from the 1950s had returned in recent years. It was distinguished from so-called "tropical sores" by its raised white lesions. It is now however a less exuberant condition; whereas formerly it often affected the nose, mouth, buttocks, and soles of the feet, today it usually affects the legs and is often called "dry" yaws. Neither plantar lesions nor bone involvement is now being seen.

It is often stated that syphilis is also becoming a milder disease and doubtless parallel factors exist for both conditions. In the case of yaws, the much expanded schools programme ensures that children with open sores of any kind are more likely to be referred to rural health centres, or to a rural health nurse, much earlier than would previously have been the case.

#### SYPHILIS

There is no doubt that the incidence of reported syphilis in Papua New Guinea has increased

markedly in the five years since 1973 and that this increase has been even more striking in the other 19 islands of the South Pacific Commission (table VIII). Some of this increase however is due to the increasing capability and use of serological screening.

Syphilis has become a problem in the Highlands since a successful yaws campaign between 1957 and 1958. The first effect was noticed in 1970 when 38 cases were reported the previous year.<sup>8</sup> It seemed likely that this rather severe and sudden outbreak reached the Highlands by way of the newly constructed east-west highway, so spreading the disease in a population that had lost its immunity as a result of yaws. As shown by a serological survey of the districts along the Highlands highway in 1970, only four (0.8%) of 506 children under 14 years had reactive results to the *Treponema pallidum* immobilisation test compared with 145 (61.2%) of 237 children the year before on Kar Kar Island, an area with some residual yaws.<sup>9</sup>

Naturally, once interest had been aroused, more and more cases were found. By 1973, nearly 95% of the reported cases of syphilis in the entire country occurred in the four districts adjacent to the Highlands highway (table IX).

TABLE IX *Prevalence of syphilis in Papua New Guinea by districts\**

Area	No of districts	No of cases	%	Rates per 100 000
Central district	1	37	3.7	21
Morobe, Chimbu, E and W Highlands	4	945	94.7	113
Other mainland districts	8	6	0.6	0.5
Islands	5	10	1.0	3
Total	18	998	100.0	41

\*Based on 1973 figures

RELATIONSHIP BETWEEN YAWS AND SYPHILIS  
That the environmental and immunological factors which favour the transmission of yaws are not conducive to the spread of syphilis, and vice versa, is well illustrated in Papua New Guinea. In the seven districts in which 98.8% of the syphilis was

TABLE VIII *Prevalence of syphilis in Papua New Guinea in relation to other islands of the South Pacific<sup>4-7</sup>*

	1973		1974		1977		1978	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
Papua New Guinea	1021	39	1152	43	1937	67	3485	117
Other islands	73	5	327	20	1099	62	1167	65
Total	1094	26	1479	34	3036	65	4652	97

\*Per 100 000 population

encountered only four (0.5%) cases of yaws were reported, and in the 10 districts with 99.5% of the cases of yaws only 1.2% of cases of syphilis were reported (table X).

TABLE X *Comparative distribution of reported cases of yaws and syphilis in Papua New Guinea\**

District	No of cases	
	Syphilis	Yaws
Eastern Highlands	277	2
Western Highlands	246	
Chimbu	233	2
Morobe	189	
Central	37	
Northern	3	
Milne Bay	1	
Total (% of national total)	986 (98.8)	4 (0.5)
Bougainville	1	374
East New Britain	2	283
Southern Highlands	2	49
West Sepik		46
West New Britain	1	38
Madang	6	28
Western		12
East Sepik		9
Gulf		4
New Ireland		3
Total (% of national total)	12 (1.2)	846 (99.5)
National total	998	850

\*Based on 1972-73 figures

### Other sexually transmitted diseases

The other sexually transmitted diseases—for example, nongonococcal urethritis, trichomoniasis, and herpes—are also prevalent but no records of these are available. The most striking feature of these disorders is the very high prevalence of Donovanosis in the Central district, where, in 1973, it was eight times more prevalent than syphilis (a rate of 175 per 100 000, table XI). The reason for the unusually high incidence in this rather localised geographical world area is far from clear but Donovanosis has been prevalent since the first world war, and 25% of 20 000 people in then adjacent West New Guinea were said to be infected in 1925.<sup>10</sup>

TABLE XI *Prevalence of Donovanosis in Papua New Guinea\**

Area	No of districts	No of cases	%	Rates per 100 000
Central district	1	308	90.3	175
Morobe, Chimbu, E and W Highlands	4	13	3.8	2
Other mainland districts	8	10	2.9	1
Islands	5	10	2.9	3
Total	18	341	100.0	14

\*Based on 1973 figures

In this series of three papers I am grateful to the World Health Organisation and the South Pacific Commission for statistical data, to both of these organisations for providing the opportunities to visit the South Pacific area, and especially to the Government of Papua New Guinea for the many kindnesses received during two assignments in that country.

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